

FISM 2.0: Improved spectral range, resolution, and accuracy

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The Flare Irradiance Spectral Model (FISM) was first released in 2005 to provide accurate estimates of the solar VUV (0.1-190 nm) irradiance to the Space Weather community. This model was based on TIMED SEE as well as UARS and SORCE SOLSTICE measurements, and was the first model to include a 60 second temporal variation to estimate the variations due to solar flares. Along with flares, FISM also estimates the tradition solar cycle and solar rotational variations over months and decades back to 1947. This model has been highly successful in providing driving inputs to study the affect of solar irradiance variations on the Earth's ionosphere and thermosphere, lunar dust charging, as well as the Martian ionosphere.

The second version of FISM, FISM2, is currently being updated to be based on the more accurate SDO/EVE data, which will provide much more accurate estimations in the 0.1-105 nm range, as well as extending the 'daily' model variation up to 300 nm based on the SOLSTICE measurements. With the spectral resolution of SDO/EVE along with SOLSTICE and the TIMED and SORCE XPS 'model' products, the entire range from 0.1-300 nm will also be available at 0.1 nm, allowing FISM2 to be improved a similar 0.1nm spectral bins. FISM also will have a TSI component that will estimate the total radiated energy during flares based on the few TSI flares observed to date.

Presented here will be initial results of the FISM2 modeling efforts, as well as some challenges that will need to be overcome in order for FISM2 to accurately model the solar variations on time scales of seconds to decades.